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10/540,451	12/15/2005	Minoru Sugiyama	3163-051952	1276

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EXAMINER

BAREFORD, KATHERINE A

ART UNIT	PAPER NUMBER
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1715

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/540,451	Applicant(s) SUGIYAMA ET AL.	
	Examiner Katherine A. Bareford	Art Unit 1715	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 February 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8, 13, 14 and 16-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 13, 14 and 16-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The amendment of February 2, 2010 has been received and entered. With the entry of the amendment, claims 9-12 and 15 are canceled, and claims 1-8, 13, 14 and new claims 16-23 are pending for examination.

Election/Restrictions

2. Applicant's cancellation of non-elected claims 9-12 and 15 in the amendment of February 2, 2010 is noted.

3. Newly submitted claims 20 and 21 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: claims 20 and 21 provide distinct species of solvent to be used, which are distinct from the invention originally claimed which provided for the specific use of the species of "methanol" only (see claims 5, 6, 13, 14).

The species are independent or distinct because they recite the mutually exclusive characteristics of such species by their different materials used. In addition, these species are not obvious variants of each other based on the current record.

There is a search and/or examination burden for the patentably distinct species as set forth above because at least the following reason(s) apply:

The species require a different field of search (e.g., searching different classes/subclasses or electronic resources, or employing different search strategies or search queries).

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits to the election of the species of methanol. Accordingly, the species other than methanol in claims 20 and 21 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-8, 13, 14 and 16-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1, line 3; claim 3, line 5; claim 7, line 3; claim 8, line 5, refers to a “pre-treatment step”, but it should be clarified what the pre-treatment step occurs before – the electroless plating?, some other step? For the purpose of examination, the Examiner has treated the pre-treatment as occurring before an electroless plating, but applicant should clarify what is intended.

Claim 3, lines 10+; claim 8, lines 10+, are the “adsorption step” and the “reduction step” the previously referred to electroless plating, or some other step? For the purpose of examination, the Examiner has treated these steps as the electroless plating, but applicant should clarify what is intended.

Claim 22, line 2 and claim 23, line 2, “the laminate is used as an actuator element” is confusing as to whether applicant means that the laminate is formed into an actuator element, or whether applicant is actually using the actuator element in a process. If applicant is actually claiming using the actuator element in a process, the claim raises issues as to what is intended under 35 USC 112/101 grounds, as discussed in MPEP 2173.05(q), because this process of use has no steps set forth involved in such a process.

The other dependent claims do not cure the defects of the claims from which they depend.

6. In the amendment of February 2, 2010, applicant argues that the pretreatment step is a separate step that precedes the electroless plating, as described in the specification. Applicant also argues that the specification makes it clear that the adsorption and reduction steps are part of the electroless plating process. The Examiner has reviewed these arguments, however, the rejection is maintained. While the specification may describe electroless plating as taking place after a pre-treatment step and adsorption and reduction steps as part of an electroless plating step; the Examiner

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must interpret the claims in their broadest reasonable interpretation (and as these are originally filed claims, they provide basis for material used), and as discussed above, the broad reading of the claim allows for these other readings of the claims, which are not actually prevented by the disclosure as worded. For example it is not clarified that "the method for electroless plating contains a pre-treatment step that occurs prior to an electroless plating step;" or "after the swelling step, an adsorption step and a reduction step are carried out to provide electroless plating to the polymer electrolyte;". After review of the specification, the Examiner has accepted a "good solvent" as being defined as one that provides that the swelling of the polymer electrolyte will be at least 110% of more that of the polymer electrolyte in a dry state (from the description at page 12 of the specification).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were

made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 1-5, 7, 8, 13 and 16-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fedkiw, Jr (US 4959132) in view of the admitted state of the prior art.

Claims 1, 2, 3, 5, 7, 8: Fedkiw teaches a method for electroless plating (where plating occurs by reducing a metal complex to form a metal film). Column 2, lines 15-40. The substrate is a polymer electrolyte, and can be in the form of a solid polymer membrane of a perfluorosulfonic acid polymer such as NAFION. Column 4, lines 25-40. Fedkiw provides that the polymer electrolyte is desirably swelled using a co-solvent in conjunction with an ionic salt of the selected metal to form the film to thereby increase the loading level and lower diffusional resistance therein (and thus can be described as swelled with (1) a solution containing a good solvent and (2) a solution containing salt). Column 2, lines 49-60. Fedkiw provides forming the metal film by the electroless process of impregnating a metal salt of the desired metal such as platinum in a cosolvent such as methanol/water (thus an aqueous solution) and adsorbing the metal salt (metal complex) into the polymer electrolyte. Column 4, lines 35-50. Then, the polymer electrolyte is contacted with a reductant solution to reduce the metal

complex to the metal(0) state and form the metal film on the polymer electrolyte (thus forming a laminate as claimed). Column 2, lines 30-40, column 4, lines 50-65.

Fedkiw teaches all the features of these claims except (1) that the swelling step is pretreatment before an electroless plating and (2) that the swelling is at least 110% of the thickness of the polymer electrolyte. However, the admitted state of the prior art teaches that it is well known to provide a electroless metal plating on a polymer electrolyte by a process of immersing the polymer electrolyte in water to swell it, adsorbing a metal complex such as a platinum complex into the polymer electrolyte in a aqueous solution, and reducing the metal complex with a reducing agent – where the adsorption/reduction steps are repeated six or more times to provide sufficient amounts of metal on the polymer electrolyte. See pages 2-3 of the present specification. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to (1) modify Fedkiw to perform multiple adsorption/reduction cycles on the polymer electrolyte to provide a desired amount of metal on the polymer electrolyte as suggested by the admitted state of the prior art is conventional in the practice of adsorption/reduction electroless plating. Since any adsorption/reduction cycle can be considered an electroless plating step, the first adsorption/reduction cycle of Fedkiw using the swelling with solvent/salt can be considered a pretreatment to the later adsorption/reduction cycles and therefore meets the requirements of the claims of providing a swelling pretreatment with solvent and/or salt. (2) As to the amount of swelling from the solvent/salt solution, it would have been obvious to one of ordinary

skill in the art to perform routine experimentation to optimize the amount of swelling done with the solvent/salt solution of Fedkiw, as Fedkiw teaches to use polymer material (NAFION) and solvent (methanol) described by applicant as achieving the desired swelling, and also indicates swelling is to increase loading level (column 2, lines 50-55) and solution concentration and time of immersion, among other factors, are to be controlled to achieve desired loading (column 4, lines 40-50), indicating swelling would be a result effective variable to be controlled with solution control to optimize loading, and “[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.” In *re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Claims 4, 13: As Fedkiw teaches that the same polymer (NAFION) electrolyte and same solvent (methanol) (column 4, lines 30-50) can be used as described by applicant, the Examiner understands that the methanol use described would inherently provide reducing the degree of crystallization as claimed. Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. In *re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977).

Claims 16-18: Fedkiw provides that the polymer electrolyte would be an ion-exchange resin (note the ion exchange process). Column 4, lines 25-50.

Claims 20-21: Fedkiw teaches that the "good solvent" of methanol can be used. Column 4, lines 45-50 (CH_3OH = methanol).

Claims 22-23: the admitted state of the prior art teaches the conventional use of a laminate plated polymer electrolyte as an actuator, which would be used as such as a drying part for a catheter. See pages 1-2 of the specification.

10. Claims 6 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fedkiw in view of the admitted state of the prior art as applied to claims 1-5, 7, 8, 13 and 16-23 above, and further in view of Burch (US 5024858).

Fedkiw in view of the admitted state of the prior art teaches all the features of these claims except the solvent being a mixed solution of a basic salt and methanol. Fedkiw does teach that the polymer electrolyte can be an ion exchange resin and that the solution can include methanol. Column 4, lines 25-50 (note the material of the substrate).

However, Burch teaches that it is well known, when treating polymers with adsorption/reduction processes (column 4, lines 40-55) that the polymers can be swelled by using a combination of both a solvent and a base in the form of a basic salt (see column 4, line 55 through column 5, line 25).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Fedkiw in view of the admitted state of the prior art to further provide a basic salt in the metal salt/methanol/water solution as suggested by

Burch to increase swelling of the polymer, as Fedkiw in view of the admitted state of the prior art provides swelling of the polymer using a solvent solution and Burch teaches that desirable swelling can also be provided by further adding basic salts to a solvent solution.

Response to Arguments

11. Applicant's arguments filed February 2, 2010 have been fully considered but they are not persuasive.

Applicant argues that the pretreatment swelling step occurs prior to electroless plating, while Fedkiw provides it as part of the first step of electroless plating; and that while the Examiner argues repeating the steps for multiple adsorption/reduction cycles would mean that the first adsorption/reduction cycle would be considered a pre-treatment for later adsorption/reduction cycles, applicant is of the position that this would be similar to the process of the Comparative Examples provided by applicant beginning on page 47 of the specification; and that the specification makes clear that a process including a pre-treatment swelling step is distinguishable from a process which does not include a swelling step performed in a pretreatment of the electroless plating.

The Examiner has reviewed these arguments, however, the rejection is maintained. As discussed in MPEP 2111, claims must be given their broadest reasonable interpretation. While the specification may describe a pretreatment step with materials and timing separated from an adsorption/reduction cycle electroless plating, the scope of the present claims is wider than that example. Claim 1 provides "A

method for electroless plating", where "the method for electroless plating contains a pre-treatment step". There is no limitation as that the electroless plating is limited to a single adsorption/reduction cycle or, if multiple electroless platings are provided, that the "pre-treatment" step must be before all of the electroless platings. Similarly, claim 3 provides "an adsorption step and a reduction step" after the swelling pre-treatment step. There is no limitation as that the electroless plating is limited to a single adsorption/reduction cycle and, where multiple adsorption/reduction cycles are provided, that the "pre-treatment" step must be before all of the adsorption/reduction cycles. Therefore, the position that the Examiner has taken does not contradict the claim language. As to the Comparative Example of applicant, it does not correspond to what is suggested by the combination of Fedkiw and the admitted state of the prior art, because the Comparative Examples refer to adsorption using an aqueous solution of gold complex (providing the metal ions) and reduction in an aqueous solution of sodium sulfite. No indication of the use of the solvent (methanol) specifically provided for by Fedkiw as part of the adsorption process to specifically swell the polymer is provided. Therefore, the claims as actually worded are suggested by the combination of Fedkiw and the admitted state of the prior art as claimed (and further in view of Burch for claims 6 and 14 as described).

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine A. Bareford whose telephone number is (571) 272-1413. The examiner can normally be reached on M-F(6:00-3:30) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy H. Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Katherine A. Bareford/
Primary Examiner, Art Unit 1715